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## NOTICE OF ALLOWANCE AND FEE(S) DUE

44696 7590 12/31/2009

DR. MARK M. FRIEDMAN  
C/O BILL POLKINGHORN - DISCOVERY DISPATCH  
9003 FLORIN WAY  
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EXAMINER	
MADAMBA, GLENFORD J	
ART UNIT	PAPER NUMBER
2451	
DATE MAILED: 12/31/2009	

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/052,435	01/23/2002	Michael Kagan	3091/21	1934

TITLE OF INVENTION: HANDLING MULTIPLE NETWORK TRANSPORT SERVICE LEVELS WITH HARDWARE AND SOFTWARE ARBITRATION

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$755	\$300	\$0	\$1055	03/31/2010

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.**

**THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.**

**HOW TO REPLY TO THIS NOTICE:**

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.**

## PART B - FEE(S) TRANSMITTAL

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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

44696      7590      12/31/2009

**DR. MARK M. FRIEDMAN**  
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**9003 FLORIN WAY**  
**UPPER MARLBORO, MD 20772**

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

### **Certificate of Mailing or Transmission**

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)

(Signature)

(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/052,435	01/23/2002	Michael Kagan	3091/21	1934

TITLE OF INVENTION: HANDLING MULTIPLE NETWORK TRANSPORT SERVICE LEVELS WITH HARDWARE AND SOFTWARE ARBITRATION

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nonprovisional	YES	\$755	\$300	\$0	\$1055	03/31/2010

EXAMINER	ART UNIT	CLASS-SUBCLASS
MADAMBA, GLENFORD J	2451	709-250000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.  
 "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively,  
(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 \_\_\_\_\_  
2 \_\_\_\_\_  
3 \_\_\_\_\_

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent):  Individual  Corporation or other private group entity  Government

4a. The following fee(s) are submitted:

- Issue Fee  
 Publication Fee (No small entity discount permitted)  
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4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- A check is enclosed.  
 Payment by credit card. Form PTO-2038 is attached.  
 The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.  b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature \_\_\_\_\_

Date \_\_\_\_\_

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This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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44696	7590	12/31/2009	EXAMINER	
DR. MARK M. FRIEDMAN C/O BILL POLKINGHORN - DISCOVERY DISPATCH 9003 FLORIN WAY UPPER MARLBORO, MD 20772				MADAMBA, GLENFORD J
ART UNIT		PAPER NUMBER		
2451				DATE MAILED: 12/31/2009

## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)

(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 758 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 758 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/052,435	KAGAN ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Glenford Madamba	2451	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1.  This communication is responsive to 12 November 2009.
2.  The allowed claim(s) is/are 1,3-5,7-10,12 and 14-40.
3.  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a)  All      b)  Some\*      c)  None      of the:
    1.  Certified copies of the priority documents have been received.
    2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3.  Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4.  A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5.  CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a)  including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1)  hereto or 2)  to Paper No./Mail Date \_\_\_\_\_.
  - (b)  including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6.  DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1.  Notice of References Cited (PTO-892)
2.  Notice of Draftsperson's Patent Drawing Review (PTO-948)
3.  Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4.  Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5.  Notice of Informal Patent Application
6.  Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_.
7.  Examiner's Amendment/Comment
8.  Examiner's Statement of Reasons for Allowance
9.  Other \_\_\_\_\_.

/Hassan Phillips/  
Primary Examiner, Art Unit 2451

**EXAMINER'S AMENDMENT**

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.
2. Authorization for this examiner's amendment was given in a telephone interview with Applicant's Representative (Mark M. Friedman, Registration No. 33,883) on 12/18/2009.
3. The application has been amended as follows:

In the Claims:

Please AMEND claim 41-80 as follows:

41. (Cancelled) (Withdrawn) An interface adapter for a packet network, comprising:  
~~a memory interface, for coupling to a memory, to which are written work items belonging to different transport service instances and corresponding to messages to be sent over the network;~~  
~~a plurality of execution engines, which are adapted to process the work items so as to generate gather entries defining packets to be transmitted over the network, each such execution engine comprising:~~

~~a buffer for holding the work items to be processed by the execution engine, the buffer having a programmable watermark level;~~

~~an execute machine, coupled to read the work items from the buffer and to generate the gather entries responsive thereto; and~~

~~a fetch machine, coupled to fetch the work items from the memory to the buffer responsive to a volume of the work items in the buffer having fallen below the watermark level;~~

~~a scheduling processor, coupled to assign the transport service instances to the execution engines for generation of the gather entries based on the work items belonging to the transport service instances; and~~

~~one or more gather engines, which are adapted to generate the packets responsive to the gather entries.~~

42. (Cancelled) (~~Withdrawn~~) An adapter according to claim 41, wherein each of the transport service instances is associated with a respective class of service, and wherein the watermark level in each of the execution engines is programmable responsive to the class of service of the transport service instances assigned to the execution engine.

43. (Cancelled) (~~Withdrawn~~) An adapter according to claim 42, and comprising an execution access arbiter, coupled between the fetch machine in each of the execution engines and the memory interface so as to control an order of access to the memory by the fetch machines in fetching the work items, responsive to the classes of service.

44. (Cancelled) (Withdrawn) A method for communicating over a packet network, comprising:

receiving work items corresponding to messages to be sent over the network;

assigning each of the work items to one of a first plurality of execution engines;

generating gather entries using, the assigned execution engines, the gather entries defining packets to be transmitted over the network responsive to the work items;

arbitrating among the first plurality of the execution engines so as to distribute the gather entries among a second plurality of gather engines; and

generating the packets using the gather engines responsive to the gather entries.

45. (Cancelled) (Withdrawn) A method according to claim 44, wherein each of the work items belongs to a respective transport service instance among multiple transport service instances on the network, and wherein assigning the work items comprises selecting the respective transport service instances for service.

46. (Cancelled) (Withdrawn) A method according to claim 45, wherein the transport service instances comprise queue pairs, and wherein the work items comprise work queue elements.

47. (Cancelled) (Withdrawn) A method according to claim 45, wherein generating the gather entries comprises reading in succession the work items in a list of the work items maintained in a memory for each of the transport service instances, and generating a sequence of the gather

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~~entries corresponding to the work items in the list.~~

48. (Cancelled) (*Withdrawn*) A method according to claim 45, wherein assigning each of the work items comprises:

~~maintaining a third plurality of scheduling queues having respective heads and tails;~~

~~entering the transport service instances to which the work items belong in the queues; and selecting the instances from the heads of the queues for assignment to the execution engines.~~

49. (Cancelled) (*Withdrawn*) A method according to claim 48, wherein maintaining the third plurality of the scheduling queues comprises associating the scheduling queues with respective classes of communication service, and assigning the transport service instances to the scheduling queues according to the classes of services to which the corresponding transport services belong.

50. (Cancelled) (*Withdrawn*) A method according to claim 49, wherein selecting the instances for assignment to the execution engines comprises assigning the execution engines in accordance with a scheduling policy relating to the respective classes of service of the scheduling queues.

51. (Cancelled) (*Withdrawn*) A method according to claim 50, wherein arbitrating among the first plurality of the execution engines comprises arbitrating among the execution engines so as to submit the gather entries to the gather engines in an order responsive to the classes of service.

52. (Cancelled) (*Withdrawn*) A method according to claim 48, wherein receiving the work items

~~comprises entering the transport service instances at the tails of the scheduling queues to which they are assigned when work items belonging to the transport service instances are received.~~

53. (Cancelled) (~~Withdrawn~~) A method according to claim 48, wherein context information regarding each of the transport service instances is recorded in a memory, and wherein entering the transport service instances in the queues comprises directing pointers in the context information of each of the instances, except the instances at the tails of the scheduling queues, to point to the context information of succeeding instances in the queues.

54. (Cancelled) (~~Withdrawn~~) A method according to claim 45, wherein the transport service instances are assigned to respective classes of service, and wherein selecting the respective transport service instances comprises choosing the instances responsive to the assigned classes of service.

55. (Cancelled) (~~Withdrawn~~) A method according to claim 54, wherein arbitrating among the first plurality of the execution engines comprises submitting the gather entries to the gather engines in an order responsive to the classes of service.

56. (Cancelled) (~~Withdrawn~~) A method according to claim 44, wherein the work items belong to different transport service instances, which are associated with respective classes of service, and wherein assigning each of the work items comprises assigning the transport service instances to the execution engines responsive to the classes of service.

57. (Cancelled) (~~Withdrawn~~) A method according to claim 56, wherein arbitrating among the

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~~first plurality of the execution engines comprises submitting the gather entries to the gather engines in an order responsive to the classes of service.~~

58. (Cancelled) (~~Withdrawn~~) A method according to claim 56, wherein generating the gather entries comprises reading the work items from the memory using the execution engines, and comprising controlling an order of access to the memory by the execution engines in reading the work items, responsive to the classes of service.

59. (Cancelled) (~~Withdrawn~~) A method according to claim 44, wherein generating the gather entries comprises generating multiple gather entries corresponding to a single one of the work items, such that each of the gather entries defines no more than a memory read operation to be performed by one of the gather engines.

60. (Cancelled) (~~Withdrawn~~) A method according to claim 44, wherein the work items comprise descriptors indicating data to be read from a memory for inclusion in the packets, and wherein generating the packets comprises reading the data from the memory using the gather engines by direct memory access (DMA).

61. (Cancelled) (~~Withdrawn~~) A method according to Claim 60, wherein receiving the work items comprises receiving remote direct memory access (RDMA) requests submitted by a host processor.

62. (Cancelled) (~~Withdrawn~~) A method according to claim 60, wherein receiving the work items

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~~comprises receiving indications of remote direct memory access (RDMA) responses to be made responsive to RDMA request packets received via the network.~~

63. (Cancelled) (Withdrawn) ~~A method according to claim 60, wherein in at least some of the messages, the data read from the memory are sent to a recipient via the network, and wherein receiving the work items comprises receiving descriptors indicating the data to be sent.~~

64. (Cancelled) (Withdrawn) ~~A method according to claim 60, wherein the work items belong to different transport service instances, which are associated with respective classes of service, and comprising controlling an order of access to the memory by the gather engines for reading the data so as to give priority in the order of access to one or more of the gather engines responsive to the classes of service.~~

65. (Cancelled) (Withdrawn) ~~A method according to claim 44, wherein the first plurality is greater than the second plurality.~~

66. (Cancelled) (Withdrawn) ~~A method according to claim 44, wherein the packets generated by the gather engines are transmitted over the network at a given transmission speed of the network, and wherein the first plurality and the second plurality are chosen so as to be capable of generating the packets at a speed greater than the given transmission speed.~~

67. (Cancelled) (Withdrawn) ~~A method for communicating over a packet network, comprising:~~

~~receiving work items belonging to respective transport service instances, wherein the transport service instances are assigned to respective classes of service, and the work items indicate messages to be sent over the network using the transport service instances;~~

~~creating a multiplicity of scheduling queues corresponding to the classes of service, the scheduling queues having respective heads and tails;~~

~~entering the transport service instances to which the work items belong in the scheduling queues according to the classes of service of the instances;~~

~~selecting the instances at the heads of the queues to be assigned for service by a plurality of execution engines;~~

~~generating gather entries using the assigned execution engines, the gather entries defining packets to be transmitted over the network responsive to the work items; and~~

~~generating the packets responsive to the gather entries.~~

68. (Cancelled) (~~Withdrawn~~) A method according to claim 67, wherein the transport service instances comprise queue pairs, and wherein the work items comprise work queue elements.

69. (Cancelled) (~~Withdrawn~~) A method according to claim 67, wherein generating the gather entries comprises reading in succession the work items in a list of the work items maintained in a memory for each of the transport service instances, and generating a sequence of the gather entries corresponding to the work items in the list maintained for the selected instances.

70. (Cancelled) (~~Withdrawn~~) A method according to claim 67, wherein selecting the instances comprises determining the scheduling queues from which the transport service instances are to

~~be selected for service by the execution engines in accordance with a scheduling policy relating to the respective classes of service of the scheduling queues.~~

71. (Cancelled) (~~Withdrawn~~) A method according to claim 67, wherein receiving the work items comprises entering the transport service instances at the tails of the scheduling queues to which they are assigned when work items belonging to the transport service instances are received.

72. (Cancelled) (~~Withdrawn~~) A method according to claim 67, wherein context information regarding each of the transport service instances is recorded in the memory, and wherein, entering the transport service instances in the scheduling queues comprises directing pointers in the context information of each of the instances, except the instances at the tails of the scheduling queues, to point to the context information of succeeding instances in the queues.

73. (Cancelled) (~~Withdrawn~~) A method according to claim 67, wherein receiving the work items comprises receiving remote direct memory access (RDMA) requests submitted by a host processor.

74. (Cancelled) (~~Withdrawn~~) A method according to claim 67, wherein receiving the work items comprises receiving indications of remote direct memory access (RDMA) responses to be made responsive to RDMA request packets received via the network.

75. (Cancelled) (~~Withdrawn~~) A method according to claim 67, wherein at least some of the messages comprise data to be read from the memory and sent to a recipient via the network, and wherein receiving the work items comprises receiving descriptors indicating the data to be sent.

76. (Cancelled) (~~Withdrawn~~) A method according to claim 67, wherein generating the gather entries comprises reading the work items from the memory using the execution engines, and comprising controlling an order of access to the memory by the execution engines in reading the work items, responsive to the classes of service.

77. (Cancelled) (~~Withdrawn~~) A method according to claim 67, wherein generating the gather entries comprises:

providing each of the execution engines with a buffer for holding the work items to be used in generating the gather entries, the buffer having a watermark level;

setting the watermark level responsive to the classes of service of the transport service instances assigned to each of the execution engines;

reading the work items out of the buffer so as to generate the gather entries corresponding thereto; and

fetching the work items into the buffers responsive to a volume of the work items in the buffer having fallen below the watermark level.

78. (Cancelled) (~~Withdrawn~~) A method for communicating over a packet network, comprising:  
receiving work items corresponding to messages to be sent over the network; assigning each of the work items to one of a plurality of execution engines, each of the execution engines

~~having a buffer for holding the work items to be used in generating the gather entries, the buffer having a programmable watermark level;~~

~~reading the work items out of the buffer so as to generate gather entries defining packets to be transmitted over the network responsive to the work items;~~

~~fetching the work items into the buffer responsive to a volume of the work items in the buffer having fallen below the watermark level; and~~

~~generating the packets responsive to the gather entries.~~

79. (Cancelled) (~~Withdrawn~~) A method according to claim 78, wherein each of the work items belongs to different transport service instances, which is associated with a respective class of service, and comprising setting the watermark level in each of the execution engines is responsive to the class of service of the work items assigned to the execution engine.

80. (Cancelled) (~~Withdrawn~~) A method according to claim 78, wherein fetching the work items comprises arbitrating among the execution engines so as to control an order of access to the memory by the execution engines in fetching the work items, responsive to the classes of service.

#### **Allowable Subject Matter**

4. Original Claims 1-40 are renumbered 1-36 respectively . Claims 2, 6, 11 and 13 are cancelled. Withdrawn Claims 41-80 are also officially cancelled by this Examiner's Amendment.

5. The following is an examiner's statement of reasons for allowance:

The Office has deemed Applicant's latest set of claim amendments and corresponding remarks / arguments persuasive to overcome the rejection under the prior art references with respect to the following amended claim features:

An interface adapter for a packet network, comprising:

a memory interface, for coupling to a memory;  
a first plurality of execution engines, coupled to the memory interface so as to read from the memory work items corresponding to messages to be sent over the network, and to generate gather entries defining packets to be transmitted over the network responsive to the work items, each work item belonging to a respective transport service instance among multiple transport service instances served by the adapter;

a scheduling processor, adapted to receive the transport service instances from a host of the interface adapter and to enter each transport service instance in a respective one of a multiplicity of scheduling queues according to a respective class of service of the each transport service instance, and coupled to assign the work items to the execution engines, for reading the work items from the memory and for generation of the gather entries, by selecting the respective transport service instances for service from the scheduling queues in accordance with the respective classes of service of the transport service instances;

a second plurality of gather engines, which are adapted to generate the packets responsive to the gather entries; and

switching circuitry, coupling the execution engines to the gather engines so as to submit the gather entries to the gather engines for generation of the packets responsive thereto.

Specifically, Applicants argument that “the difference between the teachings of the Tzeng prior art reference and the present invention is that Tzeng performs service level classification of WQEs, whereas the present invention performs service level classification of QPs (or, more generally, of transport service instances)” is found to be persuasive. Applicant’s remarks that the “HCA 12 of Tzeng receives WQEs from the host, classifies the WQEs according to service levels as determined from service level information in the WQEs themselves, matches up WQEs with QPs *only after* the WQEs have been classified according to service levels, and generates corresponding packets” and that “the present invention uses a scheduling processor to receive transport service instances from the host and to assign the transport service instances to schedule queues according to service level *before* ever reading the associated WQEs, and then matches up the transport service instances with their WQEs (or, more generally, with their work items) in execution engines, and generates the corresponding packets in gather engines”, as recited in amended independent claim 1, is also found to be persuasive.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Glenford Madamba whose telephone number is 571-272- 7989. The examiner can normally be reached on Monday-Friday 7:00AM-4: 30PM, first Fridays OFF.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on 571-272-3964. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, .contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hassan Phillips/

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Primary Examiner, Art Unit 2451